DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-001701
Date Inspected: 04-Mar-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1730
Location: Shanghai, China

CWI Name:	Hu Weiqing, Chen Xi			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☐ Yes	☑ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG Floor Beams/Deck Panels - Tower 28M

Summary of Items Observed:

Caltrans Quality Assurance (QA) Inspector Sherri Brannon arrived on site at the Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China to periodically monitor welding and Quality Control (QC) functions. While on site the QA Inspector observed and/or discovered the following.

Bay 7-OBG Floor Beam Sub Assembly:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Yuan Wensong ID#055491 groove welding at FB018-01 joining stiffener plate to floor beam plate. Mr. Yuan was observed welding in the 2G (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Weiqing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 60°C and measured the welding parameters to be 290 amps, 28.5 volts, a travel speed of 310 mm/min and a shielding gas flow of 21L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2232-Tc-U4b-F, Revision 0.

Bay 7-OBG Floor Beam Sub Assembly:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Hong Yongli ID#044801 groove welding at FB026-01 joining stiffener plate to floor beam plate. Mr. Hong was observed welding in the 2G (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Weiqing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure

Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 60°C and measured the welding parameters to be 300 amps, 29.8 volts, a travel speed of 302 mm/min and a shielding gas flow of 17L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2232-Tc-U4b-F.

Bay 7-OBG Floor Beam Sub Assembly:
QA Inspector Brannon randomly observed ZPMC qualified welder Mr. Wang Linjiang ID#051356 groove welding at FB025-01 joining stiffener plate to floor beam plate. Mr. Wang was observed welding in the 2G (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Weiqing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 60°C and measured the welding parameters to be 302 amps, 29.8 volts, a travel speed of 297 mm/min and a shielding gas flow of 17L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2232-Tc-U4b-F.

Bay 7-OBG Floor Beam Sub Assembly:
QA Inspector Brannon randomly observed ZPMC qualified welder's Mr. Chen Chuan Zong ID#044824 and Mr. Xuan Wangsong ID#055491 fillet welding at FB022-01 joining stiffener plate to floor beam plate. Mr. Chen and Mr. Xuan was observed welding in the 2F (horizontal) position utilizing flux cored arc welding (FCAW) process with a 1.4mm diameter electrode, filler metal brand Supercored 71H, class E71T-1 semi automatic. QA Inspector Brannon observed the ZPMC QC Inspector Mr. Hu Weiqing verifying that the welding parameters and pre-heat were in accordance with the Welding Procedure Specification (WPS). QA Inspector Brannon also verified the preheat temperature to be a minimum of 60°C and measured the welding parameters to be 294/292 amps, 29.4/29. 2 volts, a travel speed of 420/416 mm/min and a shielding gas flow of 17/17L/min. Welding parameters measured by QA Inspector Brannon appear to be in general compliance with the approved WPS-B-T-2132-2.

Bay 7-OBG Floor Beam Sub Assembly:
QA Inspector Brannon randomly observed ZPMC welders tack welding stiffeners to floor beam by method of flux cored arc welding (FCAW) process for FB021-02.

Bay 8-Tower 28 Meter Elevation
QA Inspector Brannon randomly observed ZPMC personnel performing heat straightening on the 28 Meter Elevation top SA 316 (E) 1st lift. ZPMC report number HSR1 (T)-087.

Bay 1-OBG Deck Panels:
QA Inspector Brannon observed the Production Monitoring Test (PMT) U-rib welding for Production Panel DP071-001 and DP028-001, closed rib welds in Bay #1. ZPMC welding operators performed gantry machine, gas metal arc welding (GMAW) for the root pass and submerged arc welding (SAW) for the final pass, on gantry machine #1. Qualified welders were observed welding in the 2G (horizontal) position utilizing gas metal arc welding (GMAW) process for the root pass with a 1.4mm diameter electrode, filler metal brand JM-56, class ER70S and submerged arc welding (SAW) process for the cover pass with a 4.8mm diameter electrode, filler metal brand JW-3, class EM 12K for the (SAW) process. ZPMC used a dual process WPS-B-T-2342-U1 (U-rib)-3 that was posted as the welding procedure specification (WPS) for closed U-rib to deck panel welding.

The ambient temperature in bay #1 was recorded at 10 degrees Celsius prior to welding. The following weld joint and welders were recorded for the PMT U-rib welding and for production panel's DP071-001 and DP028-001. Weld joint (wj)-#1 Mr. Chen Jie ID# 059468, wj-#2 Mr. Xiang Jie ID#059378, wj-#3 Mr. Gao Xin Dong ID#059361, wj-#4 Mr. Song Yin Shu ID#059421, wj-#5 Mr. Zhang Shao Hui ID#059403 and wj-#6 Mr. Xiang Huan Feng ID#059416. Gantry operator was Mr. Bi Ya Fei for GMAW and SAW. QA Inspector Brannon observed tears and fins on weld joints prior to GMAW welding. Areas were shown to ZPMC personnel prior to welding. Note: The two deck panels had the GMAW root pass applied prior to having the PMT completed resulting in an Incident report.

Production Monitoring Test (PMT)
Welding started at 1333 and completed at 1335, the following welding variables of the (PMT) were recorded at, amperage 669 to 688, voltage 24.8 to 25.3 with a travel speed of 510 mm/min, for the SAW. All three closed ribs were welded simultaneously weld joints 1~6.

Production panel DP071-001
Welding started at 09:35 and completed at 10:43, the following welding variables were recorded at, amperage 340 to 355, voltage 30.1 to 31.2 with a travel speed of 535 mm/min for the GMAW. Welding started at 1023 and completed at 10:43, the following welding variables were recorded at, amperage 676 to 685, voltage 24.8 to 25.3 with a travel speed of 520 mm/min for the SAW. Weld joints #1, 2, 5, 6, 9 & 10 were welded 1st and weld joint #3, 4, 7 & 8 were welded 2nd for the 5 rib panel. Note: While welding the GMAw root pass welding stopped due ZPMC had not completed cleaning by grinding several of the GMAW tack welds after cleaning welding resumed per ABF Peter Shaw.

Production panel DP028-001
Welding started at 10:54 and completed at 11:45, the following welding variables were recorded at, amperage 356 to 377, voltage 30.2 to 31.0 with a travel speed of 535 mm/min, weld joints #1~6 for the GMAW 3 rib panel. Welding started at 1533, but completed at end of this shift, the following welding variables were recorded at, amperage 676 to 685, voltage 24.8 to 25.3 with a travel speed of 520 mm/min for the SAW. Weld joints #1, 2, 5 & 6 were welded 1st and weld joint #3 & 4 were welded 2nd for the 3 rib panel.

QA Inspector Brannon randomly observed ZPMC QC CWI Inspector Mr. Chen Xi monitoring welding parameters were in accordance with the above Welding Procedure Specification (WPS).

The following digital photograph below illustrates observation of the activities being performed.

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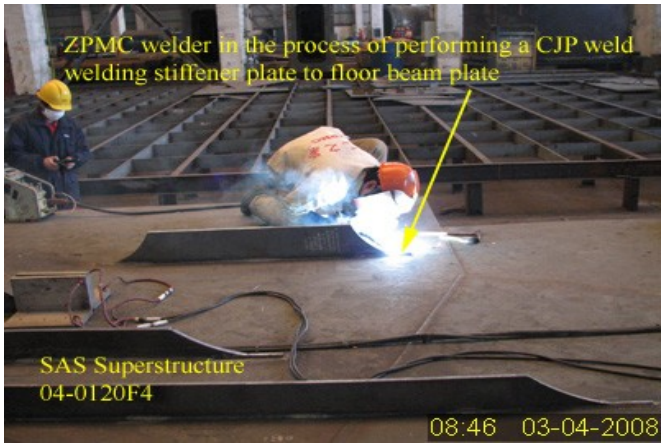

Summary of Conversations:

AS stated with in the report.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Brannon,Sherri	Quality Assurance Inspector
Reviewed By:	Cuellar,Robert	QA Reviewer